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DRAWINGS ATTACHED

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(54) IMPROVEMENTS IN AND RELATING TO JOINT ELEMENTS BETWEEN ALIGNED ANNULAR SEATING SURFACES

(71) We, Q.V.F. LIMITED, a British Company of Duke Street, Fenton, Stoke-on-Trent, Staffordshire, England, and RICHARD CHARLES BRAIN, of Hall House, Hollow Lane, Cheddleton, Nr. Leek, Staffordshire, a British Subject, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to joint elements between aligned annular seatings and more particularly to joint rings for sealing joints between annular seatings having for example, planar seating surfaces such as are used for example in axial or substantially axial joints between two pipe lengths which may be of glass and which may have any form of engaging or mating surface.

With the joint between two lengths of glass pipe it is usual for the pipe ends to have mutually facing complementary joint surfaces between which a gasket or like sealing joint element is disposed, the whole being held firmly together by a backing flange round each pipe end with bolts parallel to the common longitudinal axis of the pipes passing through apertures or slots in the flange and being tightened to draw the pipe ends together, and at the same time to compress the joint elements between the pipe ends to make a fluid-tight seal.

With certain pipe installations for example those dealing with food or beverages e.g. dairies and breweries, it is very material that in such pipe joints there are no crevices into which the fluid conveyed can seep since there it will putrefy. With the known joint elements of this type this difficulty has not been wholly overcome making it difficult to keep the pipe clean and clear of undesirable trapped material.

The main object of the present invention is to provide a joint ring for joints of the aforesaid kind which can be quickly located accurately

and when secured in position will ensure a seal between the pipe ends without the aforesaid disadvantages.

According to the present invention an annular sealing ring for sealing a joint between two annular seatings on elongated elements such as pipes comprises a unitary annular element having an annular substantially flat surface forming one face the other face having an annular bead of substantially rectangular cross section proud of the surface of the element in the axial direction, and a peripheral flange shaped to overlie the outer surface of one of said elements in an axial direction, the ring being formed of a yieldable material permitting deformation when clamped in position in a joint.

The ring is preferably of polytetrafluoroethylene or similar material such as nylon or polyethylene.

In one preferred construction a ring is formed from a circular element having a flange round its outer periphery, the bead being at its inner periphery and forming the inner edge of the ring.

The invention also comprehends an assembly comprising two elements having adjacent seating surfaces, backing flange elements engaging external surfaces on such elements, clamping devices passing through and between the flange elements and a sealing ring in accordance with the invention disposed between the seating surfaces.

In order that the invention may be more clearly understood some embodiments in accordance therewith will now be described by way of example with reference to the drawings accompanying the Provisional Specification, in which:—

Fig. 1 is a diagrammatic cross-section through an assembly of two seating elements, showing a sealing ring of the invention; and, Figure 2 is a cross section through a sealing ring.

In the Figures like references are used to designate the same or similar parts.

Referring to the drawing this shows an assembly comprising two elements 1, 2 having mating seating surfaces 3 and 4 facing each other the surfaces being substantially flat in a direction normal to the longitudinal axis of the assembly. These elements have externally outwardly tapered surfaces 5 round which, with the interposition of a resilient or cushion element 6, if required as with glass elements for example, backing flanges 7 are disposed. The backing flanges are drawn together by bolts (not shown) to secure the elements 1, 2 in alignment, a sealing ring 9 in accordance with the invention being disposed in engagement with the surfaces 3, 4 to form a fluid-tight seal.

The form of connection between the elements 1, 2 is shown as the flanges 7, but these may be of any conventional construction, and the elements 1, 2 although shown as pipe ends may be two such hollow elements for example a pipe and a flask neck or two sections of a fractionating column. The co-operating seating surfaces may be flat or of any other configuration.

The ring 9 more clearly seen in Figure 2 comprises an annular unitary ring 10 of polytetrafluoroethylene, but any suitable yieldable material such as rubber or polyethylene may be employed, but preferably a material with a plastic memory thereby having sufficient resilience to form not only a cushion but a seal between the surfaces 3, 4 by conforming fully to those surfaces to form a fluid-tight seal and to leave no crevice into which fluid such as milk or beer flowing in the pipe could seep. The material is one which preferably returns to its original shape in release from the assembly for further use.

The ring is preferably cut as a section from a cylindrical pipe of the material and may be machined flat in a conventional manner on one face. The other face is similarly machined to form a flat portion 12 having on its inner periphery a bead 13 of rectangular cross section. On its outer periphery 14 the ring has a flange 15 formed by the removal of material whereby the bead is left proud of the annular portion 12 and the upper surface of the portion 12 merges into the flange 15 by a curved portion 16; if the ring is made from a mould-

able material such as polyethylene it is moulded in a conventional manner to the aforesaid shape and may have a steel wire or like reinforcing ring or like element inset moulded in it.

At spaced points therearound the flange 15 may have slots 17 formed in it or these may be formed by cutting or otherwise removing the material to form slots. Three slots are preferred but more may be employed if desired.

It will be seen that with the rectangular bead 13 this accommodates manufacturing tolerances in the glassware and minimises the crevices which would result when the joint is made.

WHAT WE CLAIM IS:—

1. An annular sealing ring for sealing a joint between two annular seatings on elongated elements such as pipes comprising a unitary annular element having an annular substantially flat surface forming one face, the other face having an annular bead of substantially rectangular cross section proud of the surface of the element in the axial direction, and a peripheral flange shaped to overlie the outer surface of one of said elements in an axial direction, the ring being formed of a yieldable material permitting deformation when clamped in position in a joint.

2. A ring according to Claim 1 made of polytetrafluoroethylene, nylon or polyethylene.

3. A ring according to Claim 1 or 2 formed from a circular element having a flange round its outer periphery the bead being at its inner perimeter and forming the inner edge of the ring.

4. A ring according to Claim 1, 2 or 3 made as herein defined.

5. An annular sealing ring substantially as herein described with reference to Figs. 1 and 2 of the drawings accompanying the Provisional Specification.

6. An assembly comprising two elements having adjacent seating surfaces, backing flange elements engaging external surfaces on such elements, clamping devices passing through and between the flange elements and a sealing ring according to any of Claims 1 to 5.

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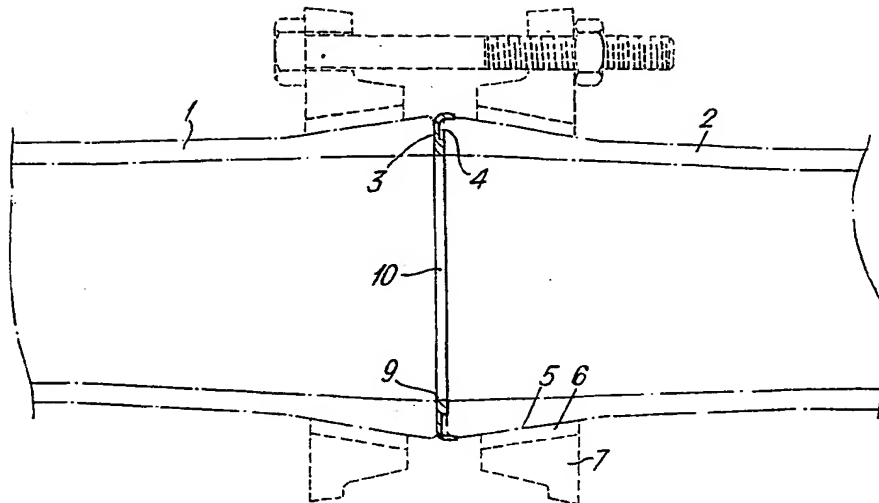


Fig. 1.

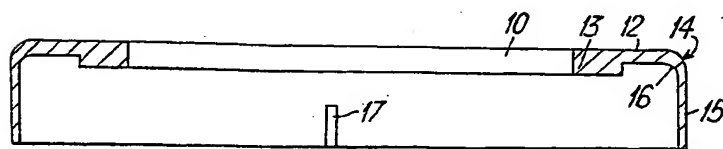


Fig. 2.

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